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File: USPT

Apr 30, 2002

US-PAT-NO: 6380970

DOCUMENT-IDENTIFIER: US 6380970 B1

TITLE: Method and apparatus for producing three-dimensional image

DATE-ISSUED: April 30, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
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US-CL-CURRENT: 348/46; 348/59

CLAIMS:

What is claimed is:

1. A stereoscopic image generating method comprising:

converting a plurality of two-dimensional images having different parallaxes into line-shaped images;

forming a first image from the line-shaped images in view of projection angles of lenticular lenses;

forming at least one second planar image; and

forming a composite image from the first image and the at least one second planar image on a recording medium disposed beneath the lenticular lenses, wherein said composite image comprises a stereoscopic image and the at least one second planar image.

2. A stereoscopic image generating apparatus comprising:

means for converting a plurality of two-dimensional images having different parallaxes into line-shaped images;

means for mixing in a desired manner a first image formed by the line-shaped images in view of projection angles of lenticular lenses and at least one second planar image to thereby form a composite image comprising a stereoscopic image and the at least one planar image; and

means for outputting the composite image to a recording medium.

3. The method according to claim 1, wherein said step of forming at least one second planar image includes forming the second planar image without combining a plurality of line-shaped images.

4. The method according to claim 1, wherein the at least one second planar image may include a picture, one or more of a character, or a computer graphic.

5. The method according to claim 1, wherein said step of forming a composite image from the first image and the at least one second planar image includes placing the second planar image at a desired position within the composite image.

6. The method according to claim 1, wherein said step of forming a composite image from the first image and the at least one second planar image includes forming the composite

image such that a part of the composite image corresponding to the at least one second planar image is not formed from a plurality of line-shaped images.

7. The method according to claim 1, wherein the recording medium includes photosensitive material.

8. The stereoscopic image generating apparatus according to claim 2, wherein the at least one second planar image is formed without combining a plurality of line-shaped images.

9. The stereoscopic image generating apparatus according to claim 2, wherein the at least one second planar image may include a picture, one or more of a character, or a computer graphic.

10. The stereoscopic image generating apparatus according to claim 2, wherein the means for mixing in a desired manner the first image and the at least one second planar image to thereby form a composite image includes means for placing the at least one second planar image at a desired position within the composite image.

11. The stereoscopic image generating apparatus according to claim 2, wherein the means for mixing in a desired manner the first image and the at least one second planar image to thereby form a composite image includes means for forming the composite image such that a part of the composite image corresponding to the at least one second planar image is not formed from a plurality of line-shaped images.

12. The stereoscopic image generating apparatus according to claim 2, wherein the recording medium includes photosensitive material.

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L5: Entry 11 of 49

File: USPT

May 30, 2000

US-PAT-NO: 6069650

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TITLE: Autostereoscopic display apparatus

DATE-ISSUED: May 30, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
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US-CL-CURRENT: 348/59; 345/6, 348/51, 359/463

CLAIMS:

I claim:

1. An autostereoscopic display apparatus comprising an image display device for providing a display output composed of pixels in a row and column array and lenticular means comprising an array of lenticular elements for directing the outputs from respective groups of pixels in mutually different directions so as to enable a stereoscopic image to be perceived, characterised in that the lenticular means further comprises electro-optic material whose refractive index is switchable by selective application of an electrical potential thereto between a first value whereby the light output directing action of the lenticular elements in mutually different directions is maintained and a second value whereby the light output directing action is removed.
2. An autostereoscopic display apparatus according to claim 1, characterised in that the lenticular means comprises a lenticular sheet comprising a material with a refractive index and a profiled surface defined by the array of lenticular elements and the electro-optic material overlies said surface, the electro-optic material having a generally flat side remote from the profiled surface and having a refractive index which is switchable between a value which is substantially similar to the refractive index of the material of the lenticular sheet and a different value.
3. An autostereoscopic display apparatus according to claim 2, characterised in that the electro-optic material comprises a liquid crystal material.
4. An autostereoscopic display apparatus according to claim 3, further comprising a transparent plate spaced from the profiled surface of the lenticular sheet with the liquid crystal material disposed therebetween.
5. An autostereoscopic display apparatus according to claim 4, characterised in that the transparent plate comprises a substrate of the image display device.
6. An autostereoscopic display as in claim 2 wherein the lenticular elements of the profiled surface are convex, and the different value of refractive index of the electro-optic material is lower than the refractive index of the material of the lenticular sheet.
7. An autostereoscopic display device as in claim 2 wherein the lenticular elements of the profiled surface are concave, and the different value of refractive index of the electro-optic material is higher than the refractive index of the material of the lenticular sheet.
8. An autostereoscopic display apparatus according to claim 1, characterised in that

the lenticular means comprises a plurality of separate regions each of which is individually switchable.

9. An autostereoscopic display apparatus according claim 1, characterised in that the image display device comprises a liquid crystal display device .